

TITLE

Viewing Panel for a Photograph

DESCRIPTION

This invention relates to a method for manufacturing a viewing panel for a photo or the like, the viewing panel being generally clear, and having a generally flat front surface, the panel having a rear surface with at least a non-flat section of pattern and/or ornamentation, the rear surface also having a masking layer applied, to create a framing effect around any photo that is on display, the ornamentation and masking layer on the rear surface being viewed from the front through the clear body of the viewing panel.

Photographs are often displayed in photo frames that have at least a single viewing panel, often a piece of glass, but to effectively present a display item such as a photograph most photo frames consist of the frame (often wood or metal), the viewing panel (often glass), and a separate backing board, and several clips to hold all the components and the photograph together.

Often in addition to these separate components a mount is added to the frame, this is placed between the clear viewing panel and the photo, the mount is used to enhance the "look" of the frame and photo. The mount is usually a flat panel (often made of paper or cardboard) with a central viewing portion cut in its centre. The photo that is on display is viewed through the central viewing portion of the mount. The mount can be plain (often a complementary colour to the photo) and/or it can have a pattern and/or ornamentation applied to its surface.

The inclusion of a mount within a photo frame has its draw backs, the mount comprises an additional component that needs to be held in place within the framing device, along with the photo and the clear viewing panel. In addition the mount is often made of thick cardboard so that when its central viewing portion is cut, there is created a further three-dimensional (3-D) framing effect around the photo. The problem with a thick mount is that increases the thickness and the size of the frame required to display a photo.

Another problem with the use of a mount is that over time they may warp and buckle, this becomes unsightly and can detract from the "look" of the photo and frame. The

mount, because it is contained within the framing unit (between the front viewing panel & the rear retention board) cannot easily be straightened or fixed, and will more likely need to be replaced. Commonly mounts are made of cardboard and are prone to buckle or become mouldy over time as they are exposed to moisture in the atmosphere. Expensive mounts can be purchased to resist moisture, but this is no guarantee that they will not warp and distort over time. Changes in temperature, over night and day, will cause the mount to expand & contract, often at a rate that is different to the material of the frame & the front viewing panel, this can cause the mount to shift, become buckled & warp overtime as such it will become unsightly. Irrespective of the material the mount is made of, because the mount and the front viewing panel are separate there will always be a gap between the mount and the viewing panel that over time moisture and mould can penetrate into, if this happens it becomes unsightly and difficult to clean, requiring the dismantling of the framing device to clean the mount and the front viewing panel. Further more if the mount has ornamentation applied across its surface, such as with grooves, it can become very difficult to clean, each groove requires a fine instrument to clean it, a simple wipe with a cloth will not clean out the grooves. These cleaning complications are also applicable if the frame itself has anything else but a simple profile, the more ornate the more mould & dust is can collect and the harder it becomes to clean.

Yet another problem with the use of mounts in photo framing is that the surface of the mount can become dirty over time, because the mount is a separate component its surfaces are exposed to the elements of the environment, even though it is placed behind the clear protective viewing panel it is a separate component that is exposed to the atmosphere and over time mould and dust can be deposited onto the surface of the mount, as this is behind the clear protective panel it is unsightly and can be very difficult to clean. To clean the mount would require the complete dismantling of the display device

The addition of a 3-D framing effect is not limited to the mount. Often the frame of a photo frame is cut with an ornate 3-D pattern. This enhances the "look" of the frame and photo. A non-flat frame incurs all the problems of cleaning that any non-flat surface does, the more intricate and fine the non-flat surface, the more difficult it is to clean. A flat surface is simple to clean, it requires a simple wipe with a cloth.

The object of this invention is to produce a viewing panel for a photo frame, the viewing panel having a generally flat front surface with at least a portion of the opposite, rear surface of the panel being non-flat, this rear surface having a masking layer applied to at least a portion of the rear surface, such that the pattern and or ornamentation of the non-flat portion of the rear surface, and the masking layer, can be seen from the front side of the panel, the pattern and ornamentation and masking layer being viewed through the clear body of the panel, the pattern & ornamentation, combined with the masking layer, creating a framing effect around any photograph or the like that is being displayed and viewed through the panel.

Such a viewing panel will eliminate the need to have a separate mount component in a photo frame, such an effect is created by having a masking layer applied to the rear surface of the clear viewing panel, the said rear surface having a non flat 3-D section of pattern and ornamentation, that with the masking layer, can be viewed from the front through the clear body section of the panel, the masking layer and 3-D section surrounding a central viewing section that a photograph or the like can be viewed.

By taking the non-flat sections of a photo frame and cutting them into the rear surface of a flat fronted clear display panel, and then covering them with a masking layer, you create a display panel with the "look" of a mount and frame without the multiple components, uneven surfaces and associated problems of dismantling and cleaning.

To assist with understanding the invention reference will now be made to the accompanying drawings. Illustration is by way of example only,

FIG 1 - A generally flat clear transparent panel (1) with a protective layer applied to its surface (2).

FIG 2 - The protective layer (2) after being cut to define what will become the central viewing portion of the panel.

FIG 3 - A cross section showing the protective layer (2) over what will become the central viewing portion of the panel.

FIG 4 - A cross section showing the creation of a non-flat 3-D textured section (3) on the rear surface of the panel (1).

FIG 5 - A cross section showing the application of a masking layer (4) of spray paint (4.1) to the rear surface of the panel (1).

FIG 6 - The partial removal of the protective film (2) from over the central viewing section of the panel.

FIG 7 - A cross section showing the masking layer (4) on a non-flat portion of the rear surface of the panel (1) whilst leaving a central viewing portion free of the masking.

FIG 8 - A cross section showing the creation of a non-flat portion (5) on the rear surface of the panel after a masking layer has been applied to the rear surface of the panel.

FIG 9 - A cross sections showing some different profiles (6) on the rear surface of the panel (1) that can be used create the non-flat 3-D texture on the rear surface of the panel.

FIG 10 - A panel with two sections of protective layer (2) being left on the rear surface of the panel (1) to create two separate central viewing sections.

FIG 11 - The rear view of a display panel, with masking layer (4) and four separate attachment elements (7) applied to the rear surface of the panel.

FIG 12 - The same panel as in FIG 11 when viewed from the front, the attachment elements being hidden from view by the masking layer (4).

The following legend applies to the accompanying figures.

1 – Clear Body Panel

2 – Protective Layer

3 – Non-Flat 3-D Rear Surface

4 – Masking Layer

4.1 – Application of masking layer with spray painting

5 – Engraving through masking layer

6 – Differing Profiles of the Non-Flat Rear Surface

7 – Attachment Elements on Rear Surface

To produce such a device a clear generally flat panel is used, it can be any such material so long as a non-flat 3-D section can be created upon or into it's rear surface. A preferred material is plastic or glass. Another option is to have a clear panel injection moulded in clear plastic with a flat front and a non-flat rear.

To one side of the panel, the side that will become the rear surface when in use (displaying a photograph or the like) a protective film is applied (Fig 1). The protective film may also be applied to the other side, the front side, of the panel to provide protection during the manufacturing process. The protective film is not required to be attached permanently. The protective film is required to be removable. The protective film is required to be able to be cut, while remaining attached to the panels surface. The protective film is required to be able to be removed easily from the panel surface, as required. The protective film can be any material such that it is able to remain attached to, and protect the surface of the panel during the stages of the manufacturing process. A preferred material for the protective film is paper or plastic with a removable adhesive on one surface to allow for releasable engagement with surface of the panel. Some sections of the protective film may be required to remain attached to the surface of the panel during the entire manufacturing process whilst being easily removable at the end of the manufacturing process.

On the rear surface of the panel, an area of the panel that is to become the viewing portion is to be determined (Fig 2), this would usually be within the centre of the panel, but it can be created anywhere or in any number of sections of the panel (Fig 10). Once defined this area is created by cutting its required shape into the protective film, the cut must be of sufficient force and accuracy such that it cuts through the protective film while leaving the panel underneath intact. The objective of the cut is to separate the protective film into sections; a section of the protective film that will cover what will become the clear viewing portion or portions of the panel, and a section of the protective film covering the area that is to have a masking layer applied to it. The section of protective film that covers what will become the clear viewing section or sections is required to remain attached to the surface of the panel during the application of the masking layer.

If a pre moulded clear panel is used, only a protective film over the viewing section needs then be applied before the masking is applied, there is no need to apply a protective film over the entire panel. It is easier to apply the protective layer to a flat surface than a non-flat surface.

With the protective film on the rear surface now divided into distinct areas the non-flat 3-D section on the rear surface of the panel can be created (Fig 4). The protective film

that covers the viewing section must be left attached, but the rest may be removed before the non-flat section is created, alternately it can be removed after the non-flat section of the rear surface has been created. If the cut that defined the viewing section has been completed the protective film can be quickly and easily removed from the rear surface of the panel, this will expose the area on the rear surface of the panel that is to have the masking layer applied to it.

A non-flat 3-D portion of the rear surface of the panel needs to be created, a 3-D texture is required to be created on and or into the rear surface of the panel (Fig 9). This 3-D effect will be created on the areas outside those of the central viewing portion. The 3-D effect can be created in a number of different ways, these can include but are not limited to engraving, etching, scoring, sand blasting, moulding, melting, grinding, drilling, chemicals, heat stamping, and pressure stamping. The protective film that covers the central viewing section is required to remain attached to the panel during this process of creating the 3-D texture without inhibiting the application of the 3-D texture. If the protective film has been left upon the rear surface it is required to not inhibit the application of the 3-D texture. For example to engrave a 3-D texture onto the surface of the masking section the protective film can be removed before the engraving is begun, if the protective film is to be left on it must not inhibit the creation of the engraving and the resultant 3-D effect. The decision to remove or leave the protective film on will depend on the type of effect being applied, the intricacy of the design and how much of the masking area will be affected by the design. For a simple design it would be easier to leave the protective film on. For more complex design it may be better to remove the protective film before starting to create the 3-D textured effect as it would become difficult to remove the masking after.

The non-flat 3-D texture can create different patterns and ornamentation on the rear surface of the viewing panel. These patterns and ornamentation will be viewed from the front through the clear body of the display. The 3-D texture created on the rear surface can be simple, such a single line or complex with a number of different profiles, patterns or captions.

Once a 3-D texture has been created a masking layer needs to be applied to the rear surface of the panel (Fig 5). It is this masking layer, on the rear surface, when viewed from the front through the clear body panel, that creates a strong visual appeal and

framing "look" for the display panel. The masking layer can also be used to highlight the non-flat 3-D textured section that is on the rear surface of the frame. The more light reflective the masking the more visible the pattern & ornamentation created by the 3-D texture will become. When the masking layer is applied to the rear surface of the panel, the protective film over the central viewing section protects it from receiving any of the masking layer, the rest of the panel, any uncovered areas, will have the masking layer applied. The masking layer will surround the central viewing portion and cover and enclose the 3-D texture. By keeping the central viewing section covered by protective film the mask can be applied quickly, in volume, over the entire rear surface of the panel. There is no need to worry about the mask hitting the area that has been defined as the viewing section because it is still covered by its section of protective film. The masking layer will attach and bond to the rear surface of the panel and any non-flat section (3-D texture) that have been created. Any masking that hits the protective film covering the viewing section will bond to the protective film, not the panel, and this is quickly & easily removed when the protective film is removed.

The masking can be applied in a variety of different forms including powder, fluids, paint, electrostatic adherence etc. A preferred method is the application of paint by spraying. Liquid paint is a preferred material as it is fluid and as such can be easily applied to a flat surface & and any irregular 3-D texture on the rear surface of the display panel. The benefit of a fluid being used to apply the mask is that it applies easily to any non-flat surfaces and when dry encloses and protects the surface that it is covering. The rear surface, where the masking layer has been applied is quickly covered and is sealed from the atmosphere. Being sealed there is no chance of mould or dust dirtying or making the 3-D textured unsightly overtime. Being sealed from the atmosphere the non-flat 3-D textured section will not be subject to the accumulation of dust and mould, this importantly eliminates the need to clean the 3-D textured surface. The pattern & ornamentation created on the rear surface is sealed from the atmosphere and viewed through the clear body of the viewing panel.

Once the mask is applied and has cured enough to be handled, the remaining section of protective film, the section that covers the central viewing portion of the display panel can be removed (Fig 6). This produces the clear central viewing section of the display device, the portion that a photo or the like will be viewed through when in use.

The resulting flat panel can be used as a panel for a photo frame or similar display device, it has a flat front surface, a clear central viewing section, a surrounding masking section and a non-flat 3-D texture on the rear surface that can be viewed through the clear body of the panel. The device is simple to use because it comprises a single piece (not three separate components; a clear panel, a mount & a textured frame), that is easy to clean as the front surface is flat and any irregular non-flat surfaces and any pattern & ornamentation are sealed from the atmosphere by the masking layer. This device also allows for a thinner framing unit, what was required to be upstanding from the surface can be cut into the rear surface of the viewing panel.

The steps in the process of applying a mask to the rear surface of the viewing panel & to apply a non-flat 3-D texture to the rear surface can be interchanged and or repeated to create a number of different textures and profiles on the rear surface and or with a number of different coloured masks on the rear surface.

The above mentioned illustrations outline, by way of example, a few of the possible embodiments of such an invention, many different versions are possible within the scope of this invention.

Another possible version is the creation of a single one piece frame by applying separate attachment elements to the rear surface of the viewing panel. For example four separate magnetic strips can be applied to the rear surface to produce a one piece magnetic photo frame (Fig 11) & Fig (12).

In another version the panel can be placed inside a traditional photo frame to enhance its look and to do away with the need for a separate mount. The above techniques can be applied to produce a number of different types of panels, specifically the use of engraving can be used to create different patterns on the display panel and to put logos and captions onto the rear surface of the display panel, these can be viewed from the front, along with any photo that is being displayed.

Variations in the appearance of the panel can be created by varying the shape of the clear body panel, varying the shape or position of the central viewing portion of the panel, varying the shape or depth of profile of the non-flat 3-D texture on the rear surface of the clear body panel, varying the pattern or ornamentation of the non-flat 3-D

texture on rear surface of the clear body panel, varying the width of the respective borders created by the masking layer around the central viewing section or the subsequent position of the viewing section of the body panel, varying the colour or combination of colours of the masking, varying the level of reflectivity of the masking, varying the shape, position or number of separate elements on the rear surface of the body panel.

The visual appearance is created by having a clear body panel having a generally flat front surface and at least a portion of the rear surface having a non-flat 3-D texture, the rear surface also having a masking layer applied to at least a portion of it. The masking layer and 3-D texture on the rear surface can be viewed from the front through the clear body panel.